Goal Management Training® Home-Based Intervention for PD-MCI: Report on Two PD patients with MCI.

GIGUÈRE-RANCOURT, A.^{1, 2}, PLOURDE, M.^{1, 2}, DOIRON, M.^{1, 2, 3}, LANGLOIS, M.^{3, 4}, DUPRÉ, N.^{3, 4}, & SIMARD, M.^{1, 2}

Affiliations: 1. School of Psychology, Laval University, Québec, QC, G1V 0A6; 2. Centre de Recherche CERVO de l'Institut Universitaire en Santé Mentale de Québec. 3. Department of Medicine, Faculty of Medicine, Laval University, Quebec City, QC. 4. Département des Sciences Neurologiques, CHU de Québec (Enfant-Jésus)

BACKGROUND

Approximately 40% of patients with idiopathic Parkinson's disease (PD) experience mild cognitive impairment (MCI), which frequently affects executive functions (Kalbe et al., 2016; Goldman et al., 2018). Previous studies showed **some efficacy of cognitive interventions in PD-MCI**, but few aimed to improve specifically executive functions in PD-MCI patients (Hindle et al., 2013; Lawrence et al., 2017; Couture et al., 2018). Caregivers often are not included and neuropsychiatric symptoms are not taken into account (Couture et al., 2018). There is a need for global, person-centered approach **tailored to the patient's characteristics** (Goldman et al., 2018).

Goal Management Training® (GMT) is a personalised, well-validated cognitive training especially targeting executive functions. It has shown efficacy in dysexecutive patients with various diagnoses (Stamenova and Levine, 2018). For PD-MCI though, adaptations are necessary.

OBJECTIVES

- **Adapt the GMT** to train executive functions in PD-MCI patients with executive deficits
- Test its **safety** and **preliminary efficacy** on both patients and caregivers.

METHOD

- **Adaptations of GMT:** Shortened from 9 to 5 sessions of 75 minutes. Exercises with motor components excluded.
- **Design:** Multiple baseline case study with two PD-MCI patients experiencing executive dysfunctions according to Litvan et al. (2012) criteria (type II evaluation was conducted before beginning of training). GMT was administered at home, for five weeks, with a caregiver.
- **Measures:** Administered before GMT, one and four weeks after.
- Reliable Change Indexes (**RCIs**) were calculated, where applicable.

Table 1. Measures of safety and preliminary efficacy

PRIMARY OUTCOMES: SAFETY	
Adherence	Number of reported / missed sessions
Fatigue	Self-rated Likert scale from 1 (no fatigue at all) to 10 (extreme fatigue)
Neuropsychiatric symptoms of participants	Neuropsychiatric Inventory, short-form – <i>Rated by caregivers</i>
Burden feeling of caregivers	Zarit Burden Interview, 12 items – <i>Rated by caregivers</i>
SECONDARY OUTCOMES: PRELIMINARY EFFICACY	
Complaints about executive dysfunctions	DEX questionnaire – <i>Rated by both patients and caregivers</i>
Quality of life of PD patients	Parkinson Disease Questionnaire, 39 items (PDQ-39)
Objective measure of executive functions: Planning abilities	Zoo Map Test (ZMT)
Global cognition	Dementia Rating scale – 2 nd edition (DRS-II)

RESULTS

Safety

Adherence: Participant-A dropped out after the first GMT session due to major health diagnosis. Participant-B completed all sessions with his caregiver. A medication change was reported after the second session (11,17% change in LED: 591mg).

No deterioration in neuropsychiatric symptoms occurred, and caregiver burden did not increase.

Fatigue: see figure 1.

Preliminary efficacy for Patient B

There were no differences between pre- and post-GMT on ZMT and DRS-II scores, but Participant-B indicated that he was now using daily strategies learned with GMT.

DISCUSSION

Patient A presented some characteristics (apathy and depressive symptoms at baseline) that might have affected her adherence to the intervention.

GMT seems safe for PD-MCI patients experiencing executive dysfunctions and their caregivers: **fatigue remained low, there was no change in neuropsychiatric symptoms and caregiver burden** throughout the study. Thus, GMT (with adaptations) could be a suitable option, especially since few medications are available to treat MCI in PD. However, **more studies are needed** to confirm efficacy.

CASES PRESENTATION

Patient A

Age= 77 yrs; Sex= woman; Occupation= retired clerk since 12 yrs
Education= 9 yrs; H&Y stage= 2; Years since diagnosis= 5
Total LED: 450mg
Non amnesic MCI single domain (executive functions)
NPI: Apathy and Depression (moderate)
DEX: 19/80
ZMT: 7/16 (profile score: 2)
DRS-II: 138/144
PDQ-39: 15/156

Patient B

Age= 72 yrs; Sex= man, Occupation= retired animal pathologist since 12 yrs; Education= 15 yrs; H&Y stage= 3; Years since diagnosis= 12
Total LED: 525mg
Non amnesic MCI multiple domains (exec. fcts + work. mem.)
NPI: Anxiety (low)
DEX: 26/80
ZMT: 7/16 (profile score: 2)
DRS-II: 140/144
PDQ-39: 42/156